Pacific Bird Observer

NEWSLETTER OF THE PACIFIC OCEAN BIOLOGICAL SURVEY PROGRAM, SMITHSONIAN INSTITUTION, WASHINGTON, D.C.

JUNE 1967 NO.7

COLLECTING AND PREPARING SCIENTIFIC SPECIMENS

The Pacific Ocean Biological Survey Program, in addition to its extensive banding operations, collects and prepares birds for museum research collections. To the uninitiated, a bird prepared as a scientific specimen is hardly impressive. The wings are folded close to the body and the body is slightly flattened to facilitate storage. The eyes are of cotton instead of the glass that commercial taxidermists use.

However, to the biologist a properly labeled scientific specimen represents a wealth of knowledge. From the label he can learn the bird's sex, breeding condition, soft part colors, (many of which change after death), wing and leg lengths, weight, molt, food habits and collecting locality. From the skin, he can describe the color, stage of molt, form of the bill and feet, all of which are invaluable in the study of bird classification and identification. Specimens often must be taken to ensure reliable identification and in the Pacific specimens are also useful in the study of inter-island variations between birds of the same species.

Properly prepared, a scientific specimen will last indefinitely. Specimens and their labels thus provide a valuable record of past patterns of bird distribution.

After collection, any blood or dirt on the plumage is washed off with cold water as soon as possible and a wad of cotton is stuffed into the throat in order to keep body fluids and blood from soiling the feathers. Feathers are often bent out of shape or broken if the bird must be carried any distance, and, to prevent this, it is placed head-first into a funnel made out of newspaper or a slick magazine sheet.

Actual equipment needed for skinning varies according to individual tastes; however, it usually includes the following: a sharp knife or scalpel, scissors, wire or bone cutters, stiff wire, needles and thread, forceps, a tray containing either corn meal or sawdust, and a supply of cotton or excelsior.

Before skinning a bird, a record is made of the collecting locality, a description of the bird's molt, wing and leg lengths, weight and any other pertinent data. This information is later transferred to the tag which is fastened to the leg of the finished specimen.

The upper wing bones are then broken as close to the body as possible. The bird is placed on its back on a tray or pie tin containing sawdust, the feathers on the abdomen are parted, and an incision along the median line is made from the posterior part of the breastbone to the anus. The cut must be deep enough to penetrate the layer of skin and fat but not deep enough to puncture the heart and stomach muscles. Sawdust or corn meal is placed in the cut. The handle of the scalpel is used to separate the skin from the body wall. The skin is worked loose to the first joint which is grasped with the thumb and forefinger and pulled out of the skin. After working the skin loose completely around the joint a scalpel or bone cutters is used to sever it at the joint of the thigh and lower leg. After separating the other leg from the body by the same technique, the skin is worked loose to the base of the tail. The bone is cut just anterior to the oil gland with scissors or bone cutters. Care is taken not to cut through the skin in the region of the tail. After the tail is free, the skin is pushed in the direction of the head, rolling it up inside out as it becomes free of the body. The scalpel handle may be used to separate the skin from the body but fingers and fingernails are faster.

The muscles attached to the wing are severed, and the skin is rolled inside out towards the head. This procedure keeps the fat from soiling the feathers. The skin is pushed over the neck and posterior portion of the head.

The ear is connected to the skull by means of a skin tube which is pulled out with the thumb and forefinger or cut with a scalpel. After the ears have been separated from the skull, the skin is pushed on towards the beak. The eyeballs are covered with a thin membrane which connects the eye with the eyelids. The membrane is cut without cutting through the eyelid or eye. The skin is then pushed to the base of the bill. The eyes are removed by inserting forceps into the orbits, grasping the optic nerve and pulling the eyeball out. Care is taken not to puncture the eyeball because the fluid will soil the feathers.

Scissors are used to cut out the back of the skull. The neck is pulled loose from the skull, and the brain is exposed. The brain and any muscles or fat are removed from the skull.

The wing, leg, and tail bones are cleaned of all muscles and fat. On the wings, two main bones, the radius and the ulna, are felt through the feathers. The muscle tissue attached to these bones is cut out by making a longitudinal cut between the bones on the underside of the wing. Muscles and tendons are pulled out and cut off. Care is taken not to loosen the primary feathers. All muscle tissue and tendons are cut off the leg bones and the skin is stripped down to the next joint. Cotton is wound around the bones to compensate for the loss of the muscles. On larger birds such as albatrosses, an incision which exposes the tendons is made on the foot. These tendons are pulled out and cut off. The oil gland, which is located at the base of the tail and keeps feathers

from drying and becoming brittle, is cut out completely.

The skin must be scraped thoroughly so that all fat and flesh are eliminated. It is best to scrape the skin until the feather tracts become visible. Bird skins with excess fat are washed in soap or detergent, and rinsed and soaked in gasoline for two or three hours. The skin is squeezed and blown dry with an air blower.

Next the skin is turned right side out. Balls of cotton slightly smaller than the eyeballs are inserted into the orbits with forceps. The ends of the wing bones are tied together to hold the wings into the body.

Constructing the new cotton or excelsior body is probably the most difficult step. This body is similar in form but slightly smaller than the skinned body. A stiff wire, sharpened on one end, is thrust through the excelsior body as shown in Figure 1. The body is then wrapped with thread and cotton

(Cont'd on next page)

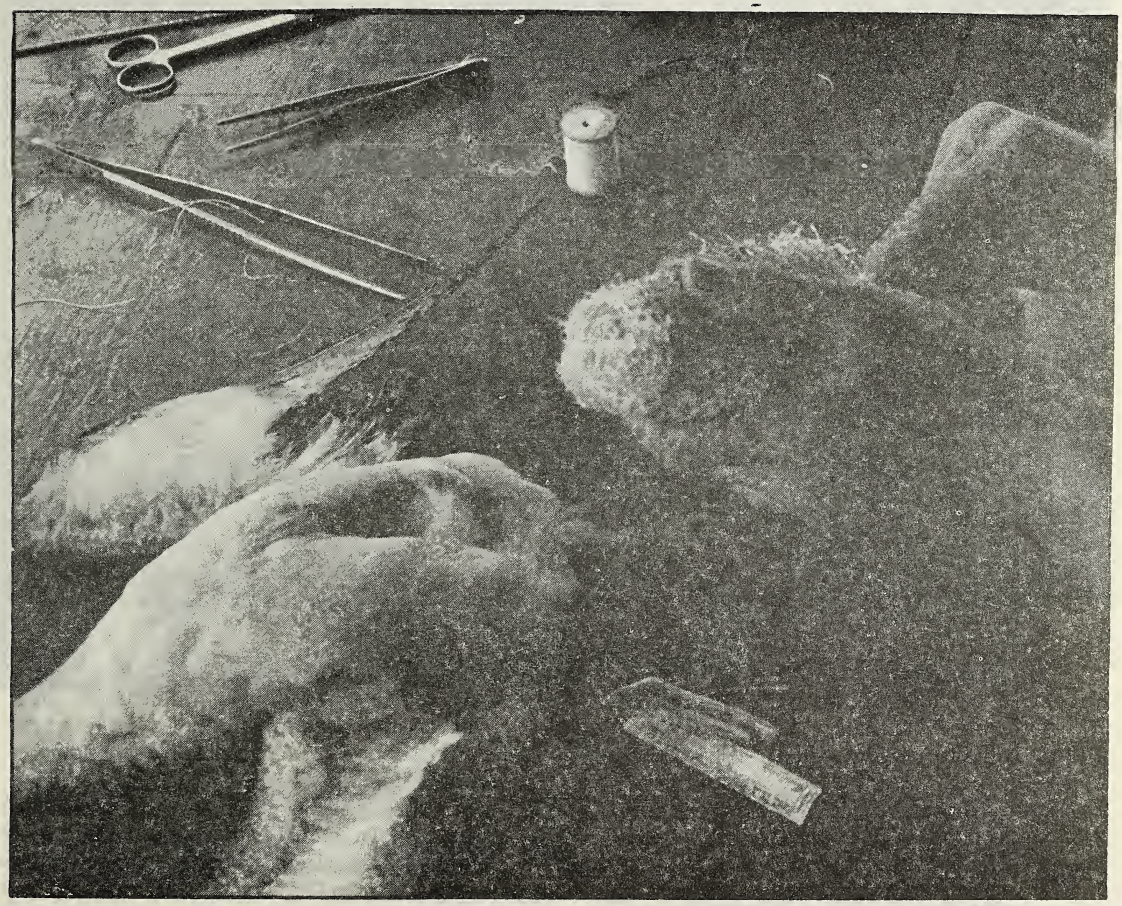


FIGURE 1. Photo by A. B. Amerson, Jr.

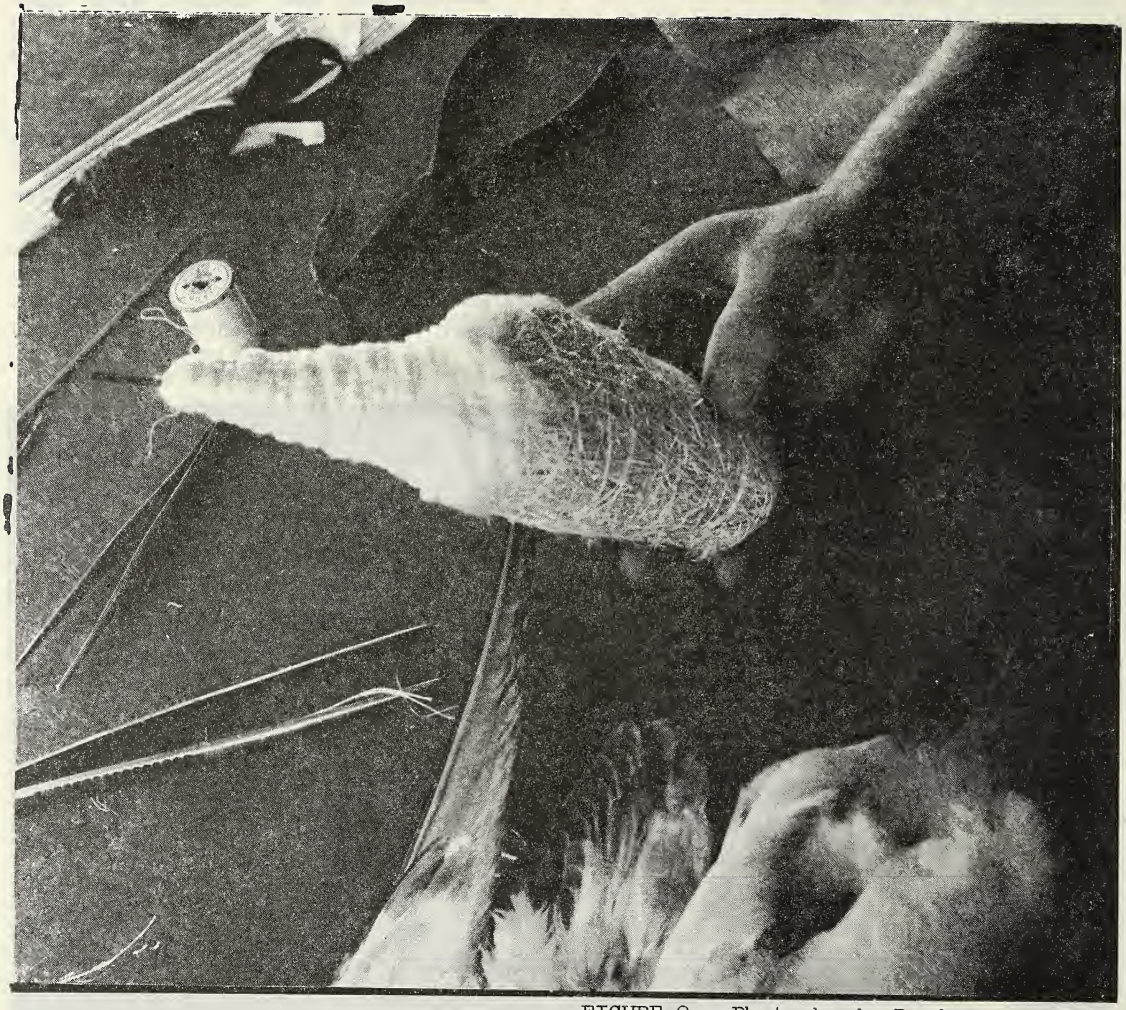


FIGURE 2. Photo by A. B. Amerson, Jr.

is added to the upper part (Figure 2) to form the neck. The body is then placed in the bird, so that the end of the wire protrudes through the mouth. The end of the wire is then bent and forced into the inside of the upper beak.

The main cut is sewn together; the bill is tied together (Figure 3) and the wings are wrapped with brown wrapping paper to hold them in place until the specimen has dried. The brown paper is in strips four inches wide and long enough to encompass the bird. The strips are held in place with long straight pins. In addition to holding the wings in place, the paper also keeps the feathers arranged in order. Two to three days is usually sufficient to dry the specimen. It is then unpinned.- John H. Fitch

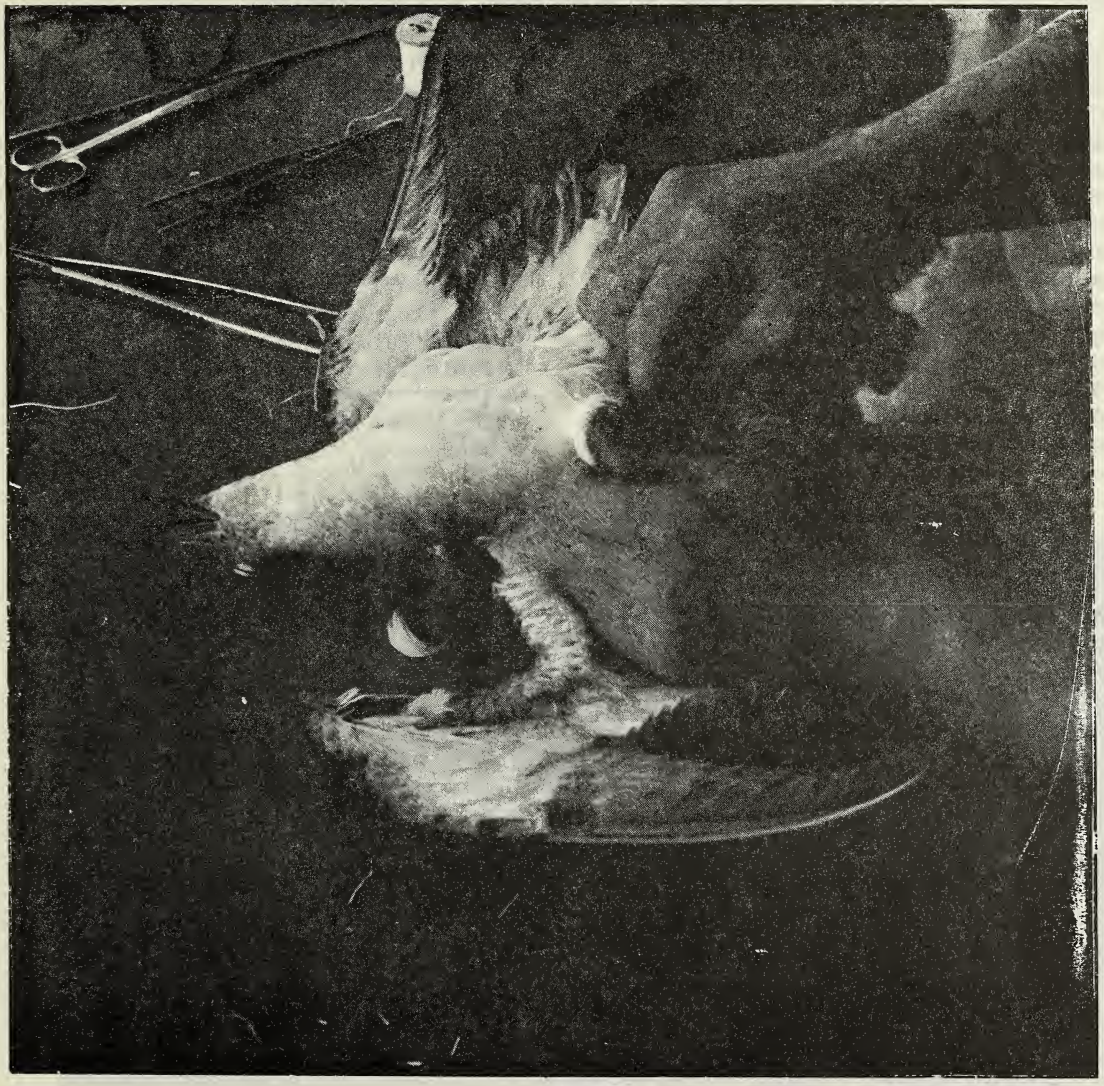


FIGURE 3. Photo by A. B. Amerson, Jr.

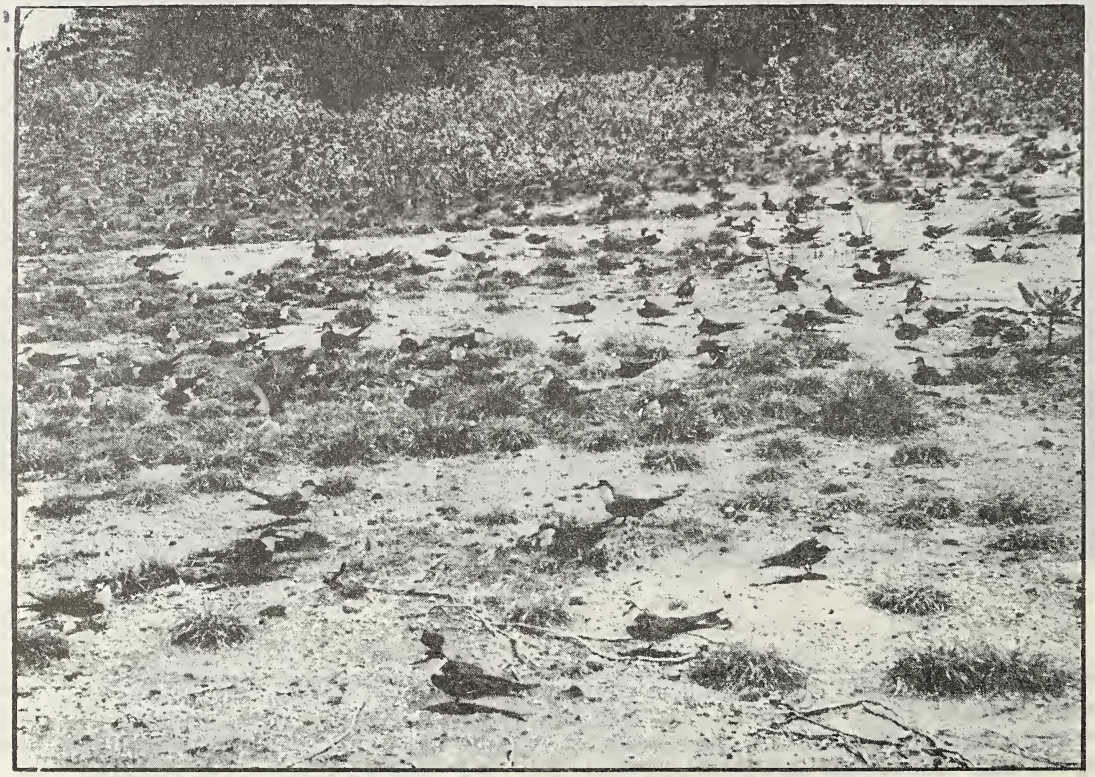
We continue to be gratified and pleased by the ever-increasing number of letters which are sent to our Washington address. These concern sightings of birds at sea, reports of finding birds which we have banded and questions about identification. The Preliminary Smithsonian Identification Manual: Seabirds of the Tropical Pacific Ocean has recently been printed. A free copy of the manual will be sent on request.

SOOTY TERNS BREEDING ON PALMYRA

Palmyra (5°52'N, 162°06'W) is a coral atoll of many small islets on a barrier reef enclosing three distinct lagoons. The islets are scattered over an area 5-1/2 miles from east to west and 1-1/2 miles from north to south. They are low - the highest about six feet above sea level - and are heavily overgrown with vegetation. Coconut and other trees reach heights of 60 to 100 feet. Cooper Island, the largest islet, has an area of 46 acres and is on the northern side of the Atoll. During World War II an airbase with a runway 6000 feet long was constructed on Palmyra. Most of the base was located on Cooper Island.

After being abandoned in 1949, Palmyra was reoccupied for scientific purposes during 1960. The airstrip was an important part of the logistic support of the scientific program and was renovated. At present Palmyra is occupied by meteorologists working on the Line Islands Experiment, a project to study the meteorology of tropical disturbances, directed by the Na-

(Cont'd on next page)



Sooty Tern Colony on Palmyra Photo by C. C. Mathewson

tional Center for Atmospheric Research, Boulder, Colorado.

Sooty Terns are widespread and abundant tropical and subtropical birds, black above and white below, with a white forehead, black feet, legs, and bill. They are about 15 to 17 inches long. They feed on squid and small fish and are often seen skimming and hovering over the water. Their breeding varies throughout the year; in some areas it follows a regular annual cycle but in other areas the cycle may be irregular or even continuous. Sooty Terns breed in large colonies, which may contain as many as 500,000 birds or more. They do not build nests. Instead they usually lay their one egg on the bare ground.

During February 17 to 20, 1967, while the USC&GS Ship SURVEYOR visited Palmyra, Sooty Terns were nesting on most of the abandoned airstrip. No other nesting areas were found. While renovating the runway for the Line Islands Experiment, it was unfortunately necessary to destroy a great number of freshly laid eggs. The construction work drove the adult birds into an area of approximately 16,000 square meters on the northeastern end of the airstrip. The density of terns in this area was about 6 birds per square meter, with only about 2 of these actually sitting on eggs. The Sooty Terns on eggs

(Cont'd on next page)

Density of Scoty Terns in the Airstrip Nesting Site.
Photo by C. C. Mathewson

numbered more than 30,000 and the entire population was more than 95,000.

On March 27, 1967, when Palmyra was visited again, over 95,000 eggs were observed in the airstrip colony. Some of the nests contained two eggs, which is not the normal clutch-size of the Sooty Tern. About 5 percent of the eggs had hatched. The oldest chicks were about 4 days old.

The importance in the role of the parent birds in the survival of the egg or chick was demonstrated during this visit. The parent birds shaded the egg or chick from the midday sun by standing over them until an approaching intruder actually threatened them. Once the chicks were able to move about on their own other adults would chase them away from their nests as they did other intruders. I did not determine whether or not the parent birds recognized their own young.

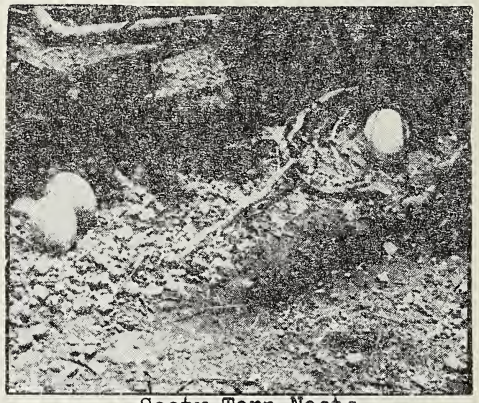
Two new nesting sites were found during the March visit. They were on an abandoned causeway and were small colonies of only about 100 birds each. There was no major change in the population of the terns occupying the runway, even though it was frequently used by aircraft.

I believe that the breeding population of Sooty Terns on Palmyra has increased due to the construction and subsequent abandonment of the airbase. Construction of the airstrip cleared away heavy vegetation and the occasional renovation of the strip has maintained the clearing for the terns.

Naturally clear areas on Palmyra include only a few small coral islets and Barren Island. These areas are subject to frequent flooding and probably could not support the present breeding population of Sooty Terns. This new man-improved Sooty Tern Breeding ground will be utilized as long as the airstrip is occasionally renovated. Should the airstrip become heavily overgrown, this Equatorial Pacific breeding ground probably would be lost.

The Sooty Terns on Palmyra demonstrate one of the ways wildlife can adapt to man's activities.

Contributed by
Christopher C. Mathewson
Lieutenant Junior Grade
E.S.S.A., Coast and Geodetic Survey



Sooty Tern Nests
Notice the one with two eggs.
Photo by C. C. Mathewson

The Pacific Bird Observer is a newsletter distributed to collaborators of the Pacific Ocean Biological Survey Program of the Smithsonian Institution in order to promote a better understanding of birds and their relation to man in the Pacific.